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EXAMINER

ABOAGYE, MICHAEL

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/533,177

Applicant(s)

ILYUSHENKO ET AL.

Examiner

Michael Aboagye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1- 4, 6-16 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated Forrest et al. (US Patent No.6,398,883).

Forrest et al. discloses a method of welding together two metal work-pieces, the method including the following steps: providing two metal work-pieces machined from a block of an aluminum alloy or a wrought metal (see, column 3, lines 14-20), preparing a portion of each work-piece by friction stir welding process resulting in grain structure refinement of the region extending from the exterior surface into the work-piece to a depth of about 6.5 mm (at least 10mm) and having grain structure finer than the grain structure of the work-piece outside that region (see, column 3, lines 15-26, and abstract). After the preparing step, securing the two metal work-pieces together by fastening or welding (see column 5, lines 41-47); wherein said region extends into the work-piece to a depth that exceeds the depth of material that is caused to melt during

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the fusion welding process; wherein the welded component is used as an air craft component (see, column, lines 45-47).

Regarding claim 2, it is noted that the method as disclosed by Forrest et al. includes a friction stir device with a probe or pin which travel through the structural work piece at a speed of about 127 mm – 720 mm per minute (5- 30 inches per minute) depending on the thickness of the work pieces, said probe is capable of joining two structural work-pieces having joint depth greater than 50 mm (see, abstract, figures 1, 2(A-D), 3(A-B), 16; column 1, line 10 – column 3, line 56 and column 5 line 30 – column 8, line 67).

3. Claims 1, 3, 4, 6-16 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Litwinski et al. (US Patent No. 6,726,085).

Litwinski et al. discloses a method of welding together two metal work-pieces, the method including the following steps: providing two metal work-pieces machined from a block of an aluminum alloy or a wrought metal, preparing a portion of each work-piece by friction stir welding process resulting in grain structure refinement of the region extending from the exterior surface into the work-piece to a depth of about 6.5 mm (at least 10mm) and having grain structure finer than the grain structure of the work-piece outside that region (see, abstract; column 3, line 36- column 4, line 14; and column 10, line 64 – column 11, line 11). After the preparing step, securing the two metal work-pieces together by fastening or welding; wherein the welding process involves a fusion process that bonds the respective prepared portions of the two work-pieces (see, column 12, lines 44-58), wherein said region extends into the work-piece to a depth that

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exceeds the depth of material that is caused to melt during the fusion welding process; wherein the welded component is used as an air craft component (see, abstract, column 1, line 14 – column 4, line 24, column 10, line 64 – column 11, line 11; column 15, lines 4- 58 and figure 19).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Litwinski et al. (US Patent No. 6,726,085) and Forrest et al. by (US Patent No. 6,398,883) taken

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individually in view of Matsumoto (JP 2001-150155, with a computer translated english version).

Litwinski et al. and Forrest et al. individually teach the claimed invention as set forth in claim 1 but do not expressly teach fusion welding process performed by means of electron beam welding process.

However Matsumoto teaches a method of welding a first member and a second member, said members being aluminum or aluminum alloy materials, wherein the fusion welding process is performed by an electron beam welding process; wherein said electron beam welding process is adapted due to easy deep penetration, high welding speed, a narrow width of heat affected zone and consequent reduction in the propensity to distortion of the weldment (see Matsumoto, drawings 1-7; abstract and paragraphs [0001]-[0008] of translation).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have adapted an electron beam welding as the form of fusion bonding process in the method of either Litwinski et al. or Forrest et al., as taught by Matsumoto, in order to achieve easy deep penetration, high welding speed, a narrow width of heat affected zone and a reduced propensity to distortion of the weldment (see Matsumoto, abstract and paragraphs [0001]-[0008] of translation).

Response to Arguments

7. The examiner acknowledges the applicants' amendments received by USPTO on July 11, 2006. Claims 17-21 have been cancelled, claims 1- 16 remain, and new claim

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22 has been added, therefore claims 1-16 and 22 remain under consideration in the application.

8. Applicant's arguments filed July 11, 2006 have been fully considered but they are not persuasive. Regarding the applicants, argument that the Forrest reference does not teach a method of welding two work-piece. It should be noted that the insert and the structural member disclosed by Forrester (column 11, lines 27-56) is interpreted as two work-pieces forming the structural assembly 10. Further Forrester teaches the hybrid welding process comprising friction stir welding and fusion welding (column 11, lines 27-56). The friction stir process also is taught to result in grain refinement, which eliminates stress and defects, improves strength, toughness and fatigue strength (abstract and column 12, lines 1-3). Regards to the argument about fusion welding, note that Forrester teaches a structural member including one or more inserts joined to the member by welding which can be either a fusion or non fusion welding process (column 11, lines 27-30). Regards to the depth of penetration, Forrester teaches full penetration mixing of work-piece with thickness more than 50mm (3 inches) (column 8, lines 10-15). Therefore the claim 1- 4, 6-16 and 22 rejection of under 35 U.S.C. 102(b) still stands.

9. Regarding Litwinski et al. reference, the applicant argues about the apparatus. It is noted that the process disclosed by Litwinski et al. is rather pertinent to the claimed invention. The applicant in his argument on page 13 admitted that Litwinski et al. disclosure comprises friction stir treatment to refine a work-piece to form a preform and

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connecting to other structural members using welding techniques to form structural assembly such as a frame of an aerospace vehicle an. Further to this applicant admission, Litwinski et al. teaches that the refined work-piece provides a perform for use in forming structural members and assemblies by welding techniques (column 3, lines 65-67, and column 15, lines 55-58). Note the said welding technique is interpreted to include both fusion and non-fusion welding processes. It is noted that the subject matter of the applicant's claimed invention is expressly disclosed by Litwinski et al. said method equally results in a structure that resists the formation and propagation of micro-cracks and exhibits improved strength, ductility and toughness, as well as improved intergranular corrosion and fatigue resistance. Therefore the claims 1, 3, 4, 6-16 and 22 are rejection under 35 U.S.C. 102(e) as being anticipated by Litwinski et al. is deem proper.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


JONATHAN JOHNSON
PRIMARY EXAMINER


Michael Aboagye
Assistant Examiner
Art unit 1725
09/15/2006

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